

SN: 071-0010

Bridge Condition Report

DISTRICT: 2

ROUTE: SBI 26 (IL 26 & US 52)

SECTION: 4V (Original), 4VB-1 (Reconstruction)

COUNTY: Ogle

STRUCTURE NUMBER: 071-0010 (EXISTING)



LOCATION: IL 26 & US 52 over BN Railroad
(North edge of Polo)

PREPARED BY: Kenneth S. Couperus

DATE PREPARED: December 2007

PROPOSED LETTING DATE: March 2009

I. Geographical & Administrative Data:

Structure Number: 071-0010
County: Ogle
Route Carried: SBI 26 (IL 26 and US 52)
Feature Crossed: Burlington Northern Railroad
Section: 4V (Original), 4VB-1 (Reconstruction)
Station: 27+55 (Original), 28+26.45 (Reconstruction)

Roadway Classification: Other Principal Arterial
Design/Posted Speed: 55 MPH/ 55 MPH
ADT (current/future): 2005 (4350) / 2021 (3800)
ADTT (current/future): 2005 (479) / 2021(418)
DHV: 435
Inventory Rating HS: 24.7
Operating Rating HS: 48.6
Sufficiency Rating: 71.7

Construction / Reconstruction / Repair History:

Construction: The original structure was built in **1928** as a five span RC Tee Beam superstructure built on 2 full height abutments and 4 multi column piers founded on untreated 15 ton timber piles under SBI 26, Section 4V.

Reconstruction: During **1976**, new stub abutments were placed and the existing piers were widened along with a new PPC Deck Beam superstructure under section 4VB-1, CN: 30540.

Rehabilitation: In **1995** the bituminous wearing surface was replaced with a 5" concrete overlay section unknown.

II. Physical Description of Structure:

Structure 071-0010 is a simple five span PPC I-beam superstructure with 15 beam lines on two open reinforced concrete stub abutments founded on metal shell concrete piles and four reinforced concrete multi column piers founded on 15 ton untreated timber piles (original portion) and steel H piles (widened portion) with zero skew angle. There are PJS expansion joints at the abutments and Piers.

There are no bearings (has fabric bearing pads) on this structure. There is a 5 inch thick concrete overlay on the superstructure.

The back-to-back abutment length is 294 ft-1/2" and the span lengths are 43 ft-0" (spans 1), 66ft -0" (spans 2, 3 & 4), and 53 ft- 6" (span 5). All beams are 33" deep and 36" wide. The out-to-out deck width is 45ft.

The structure provides for one 12' traffic lane in each direction with 10ft concrete shoulders on each side. There are no sidewalks. The railing consists of a double steel tube type T mounted to W6 X 25 posts.

The existing structure is located on tangent horizontally and on the high point of a vertical curve near the center of the structure. The approach roadway template at both ends is a 24ft bituminous pavement with 10ft bituminous shoulders.

The slope walls consist of 4 inch thick concrete. There are Power lines running under span 1 near the South face of Pier 1 which parallel the RR tracks. There is also a cable line running parallel to the structure on the East side.

III. Field Inspection & Physical Evaluation:

Wearing Surface: The concrete overlay is **12** years old and in satisfactory condition. There are numerous hairline to narrow reflective keyway cracks showing over the majority of the structure.

The bridge rail, transitions and ends are substandard.

Superstructure: The superstructure is **31** years old and in **fair** condition. There are 13 beams with areas of delaminations. 12 of the 13 are located at the beam ends. See the damage report and the survey in attachment E for locations and photos of damaged areas. In span 2 beams 8 and 9 have up 6 inches of bearing loss. The keyways are not leaking heavily yet and no independent movement has been identified.

Substructure: The original portions of the piers are **79** years old and the newer portions of the substructure are **31** years old and in **satisfactory** condition. Concrete in the substructure is generally sound. The piers have typically HL to narrow cracking at random locations. There is a large spall with exposed bar on the arch portion of the North face of Pier 3 and the entire East arch of pier 4 is spalled with exposed rebar. The pier caps are stained from leaking joints. The abutments are in good condition with few defects. The condition of the untreated timber piles under the original portion of the piers is unknown.

The small wing walls exhibit narrow map cracking and rust staining.

Inspection History (NBIS Ratings):

Year	Deck (58)	Super (59)	Sub (60)
2007	5	5	6
2006	4	4	6
2005	6	6	6
2003	6	6	6
2001	6	6	6
1999	6	6	6
1995	8	8	7

Geometric/Hydraulic Data:

The deck geometry is rated a 7-better than adequate to be left in place and the under clearance-vertical and lateral appraisal are rated 4-minimum adequacy to be left in place and the structural evaluation is rated 5-better than adequate to be left in place. No occurrences of overtopping have been documented.

IV. Potential Scope of Work Determination & Analysis:

Due to the recent problems and concerns associated with PPC Deck beam superstructures, the age and condition of the substructure (previous major rehabilitation), and the unknown condition of the untreated timber piling it is recommended that the scope of work for this structure is complete structure replacement.

V. Discussion and Recommended Scope of Work:

The recommended scope of work for this structure is complete replacement at an estimated cost of \$1,590,360.00.

Traffic Control: Because this is a deck beam superstructure, the traffic control during construction should be evaluated during Phase I in programming using TMA-Traffic Management Analysis. (To be determined by Program Development). Note: for staging purposes both directions are in similar condition at the time of this BCR preparation.

ATTACHMENTS:

Attachment A:	Location map
Attachment B:	IDOT Master Structure Report
Attachment C:	Bridge Inspection Report
Attachment D:	PONTIS Inspection Report
Attachment E:	Springfield Damage Report, soffitt survey and soffitt photo log
Attachment F:	Structure Photos
Attachment G:	Abbreviated Existing Plans and select Original Plans
Attachment H:	Cost Estimates

Illinois Department of Transportation
Structures Information Management System
Master Structure Report (S-107)

Structure Number: 071-0010 District: 2

Data Related to Inspection Information

***Inspection Intervals ***
 Routine NBIS: 12 MOS Underwater: 0 MOS One Truck At A Time: [] Tons
 Fracture Critical: 0 MOS Special: [] MOS Single Unit Vehicles: [] Tons
 Bridge Posting Level: 5 [] No Posting Required []

*** Maximum Allowable Posting Limits ***

Inspection Date: 10/11/2007 Inspection Temperature: 50 Deg. F
 Deck: 5 FAIR CONDITION - MINOR SECTION LOSS, CRACKS
 Superstructure: 5 FAIR CONDITION - MINOR SECTION LOSS, CRACKS
 Substructure: 6 SATISFACTORY CONDITION - MINOR DETERIORATION
 Culvert: N NOT APPLICABLE
 Channel and Protection: 8 VERY GOOD CONDITION - NO PROBLEMS NOTED
 Structural Evaluation: 5 BETTER THAN ADEQUATE TO BE LEFT IN PLACE
 Deck Geometry: 7 BETTER THAN PRESENT MINIMUM CRITERIA
 Underclearance-Vert/Lat.: 4 MINIMUM ADEQUACY TO BE LEFT IN PLACE
 Waterway Adequacy: 9 SUPERIOR TO PRESENT DESIRABLE CRITERIA
 Approach Roadway Align: 8 EQUAL TO PRESENT DESIRABLE CRITERIA
 Bridge Railing Appraisal: 2 Doesn't Meet Standards
 Approach Guardrail: 232 Not Acceptable [] Acceptable [] Not Acceptable []
 Pier Navig Protection: N N/A

Inspection/Appraisal Information

LINKDJ
 COUPERUSKS
 N N/A
 N N/A
 N N/A
 B AD CN OVLY NT SP MX
 F NONE
 J NONE
 38.3
 Last Paint Date: []
 Inspection Remarks: 58 & 59 RAISED BASED ON DAMAGE INSPECTION RECOMMENDATIONS AND NEW BOX BEAM CRITERIA

Underwater Inspection/Appraisal Information

Inspection Date: [] Inspection Category: []
 Temperature: [] Inspection Method: []
 Inspected By: [] Appraisal Rating: []
 Inspection Remarks: []

Scour Critical Information

Rating: 8 [] CALCULATED SCOUR ABOVE FOOTING Evaluation Method: B [] Rational Analysis []
 Analysis Date: 03/16/1999 Analysis By: Etemadi/Jugnk
 Miscellaneous: Fracture Critical Members: No [] Microfilm Data Recorded: Yes []

Construction Information

Year: 1925 Original 1976 Reconstructed
 Route: FA-27 Sta: 27+51.4
 Section Nbr: 4VB-1 Sta: 27+51.4
 Contract Nbr: 30540
 Fed Aid Pr #: 0000BR-F-74(9)
 Built By: 1 I.D.O.T.

Waterway Information

Flood Design Frequency: [] YRS Drainage Area: [] Acre
 Flood Design Q (CFS): []
 Flood Design Nat H W E: [] Flood Base Q (CFS): []
 Flood Des Open Prop: [] SF Flood Base Nat H W E: []

Proposed Improvement

Cost Estimate Year: [] Length: []
 Type of Work: []
 Done By: []
 Remarks: []
 Bridge Cost: []
 Roadway Cost: []
 Total Project Cost: []
 *** Costs in Dollars ***



Element Level Field Inspection Report

SN: 0710010 **District:** 2 **Spans:** 5 **Appr. Spans:** 0 **Skew:** 00 **ADT:** 3200 **Truck Pct:** 12 **ADT Un:** 0
Facility Carried: ILL 26 **Name:**
Feature Crossed: BN RAILROAD **Location:** 1.0 MI S JCT US 52
Inspection Date: 10/12/2007 **Inspection Notes:** Most Keyways reflecting through.
Inspector 1: COUPERUSKS
Inspector 2: LINKDJ **Temp:** 50

Resources

Time to Insp:	1:00	Trffc Ctrl:	1	Boat:		Waders:		Snooper:	
Ladder:		Manlift:		Other:					

Inspector's Appraisals

Elem	Element Desc	Env	Quantity	Un	CS1	CS2	CS3	CS4	CS5
22	Concrete Deck Protected w/ Rigid Overlay	2	13149	SF	13149	0	0	0	0
Remarks: Most Keyways reflecting through.									
104	P/S Conc Closed Web/Box Girder	3	4379	LF	3610	0	0	769	0
Remarks: All beams with delaminations or spalls are in CS4 (Entire beam)									
108	Keyway	3	4087	LF	1022	3065	0	0	0
Remarks:									
210	Reinforced Conc Pier Wall	1	11659	SF	11469	30	150	10	0
Remarks:									
215	Reinforced Conc Abutment	1	118	SF	118	0	0	0	0
Remarks:									
234	Reinforced Conc Pier or Abutment Cap	1	283	LF	263	15	0	5	0
Remarks:									



Element Level Field Inspection Report

SN: 0710010 **District:** 2 **Spans:** 5 **Appr. Spans:** 0 **Skew:** 00 **ADT:** 3200 **Truck Pct:** 12 **ADT Un:** 0

302	Preformed Joint Seal	3	270	LF	135	135	0	0	0
Remarks:									

323	Approach Pavement	2	2	EA	2	0	0	0	0
Remarks:									

330	Metal Bridge Railing	2	585	LF	585	0	0	0	0
Remarks:									

Inspected By: _____